

**TECHNOLOGY CORNER**

13. Binomial Probability on the HP Prime

There are two handy commands on HP Prime for finding binomial probabilities: BINOMIAL() and BINOMIAL\_CDF(). The inputs for both commands are the number of trials *n*, the values of interest for the binomial random variable *X*, and the success probability *p*.

BINOMIAL(n, k, p) computes *P*(*X* = *k*)

BINOMIAL\_CDF(n, p, k) computes *P*(*X* ≤ *k*)

Let’s use these commands to confirm our answers in the previous example. Remember that the probability that a child from a particular set of parents has type O blood is 0.25.

1. Find the probability that exactly 3 of the 5 children from a particular set of parents have type O blood.
	* Press H to enter the Home view. Press D and tap  to open the Math menu.
	* Tap *Probability*, then *Density*, and select *Binomial*.



* + Complete the command BINOMIAL(5, 3, 0.25) and press E.



These results agree with our previous answer using the binomial probability formula: 0.08789.

1. Should the parents be surprised if more than 3 of their children have type O blood?

To find P(X > 3), use the complement rule:

*P*(*X* > 3) = 1 – *P*(*X* ≤ 3)

*P*(*X* > 3) = 1 – BINOMIAL\_CDF(5, 3, 0.25)

* + Enter x w
	+ Press D and tap  to open the Math menu.
	+ Tap *Probability*, then *Cumulative*, and select *Binomial*.
	+ Complete the command 1 – BINOMIAL\_CDF(5, 0.25, 3) and press E.



This result agrees with our previous answer using the binomial probability formula: 0.01563.